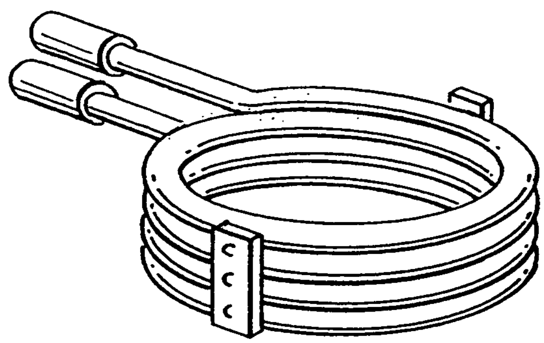


FIG.1a

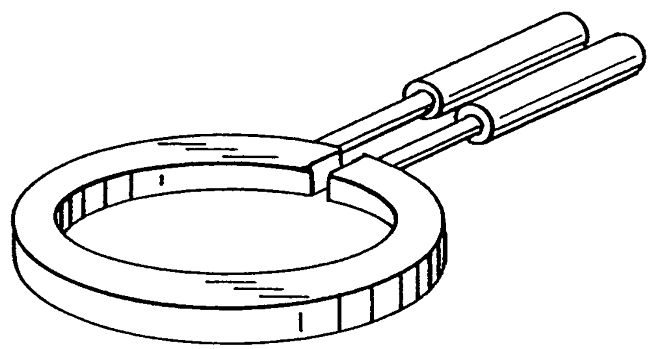


FIG.1b

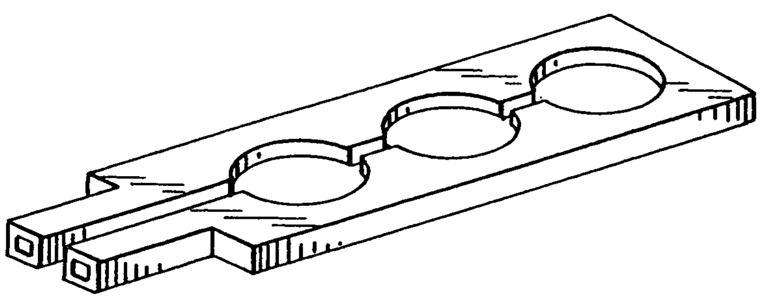


FIG.1c

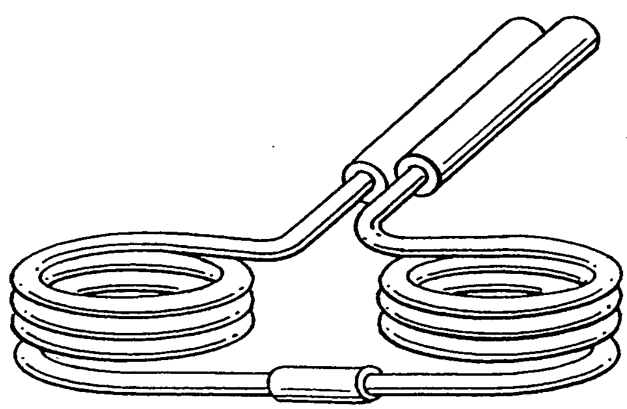
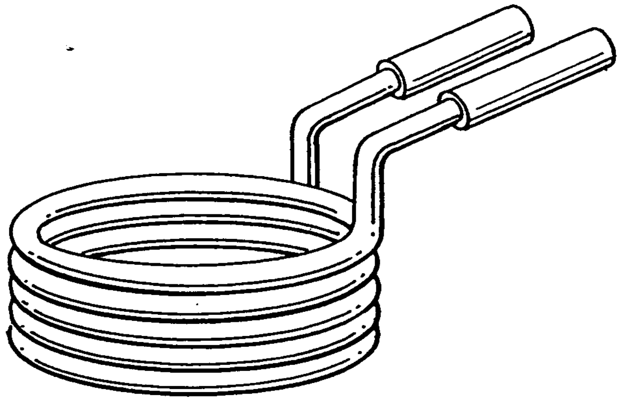
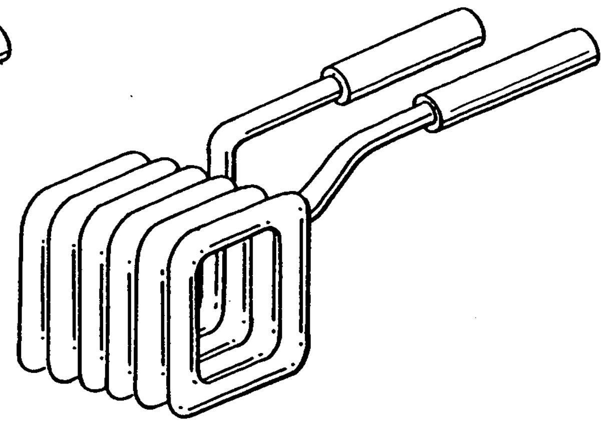


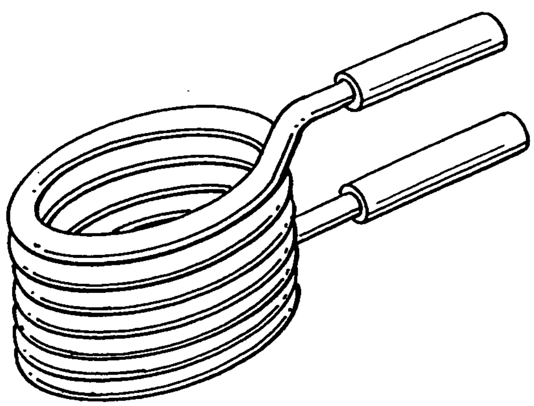
FIG.1d



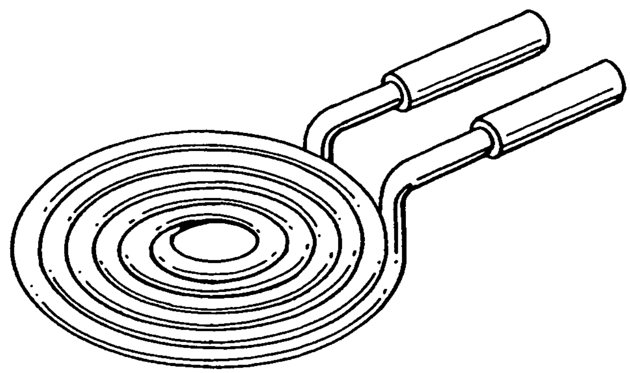
ROUND
FIG.2a



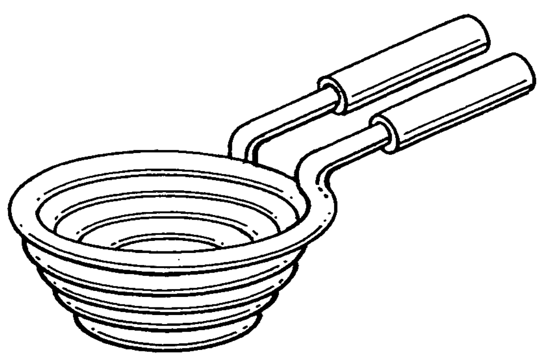
RECTANGULAR
FIG.2b



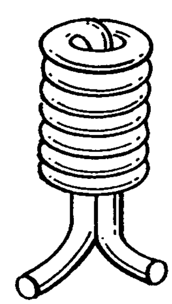
FORMED
FIG.2c



PANCAKE
FIG.2d



SPIRAL-HELICAL
FIG.2e



INTERNAL
FIG.2f

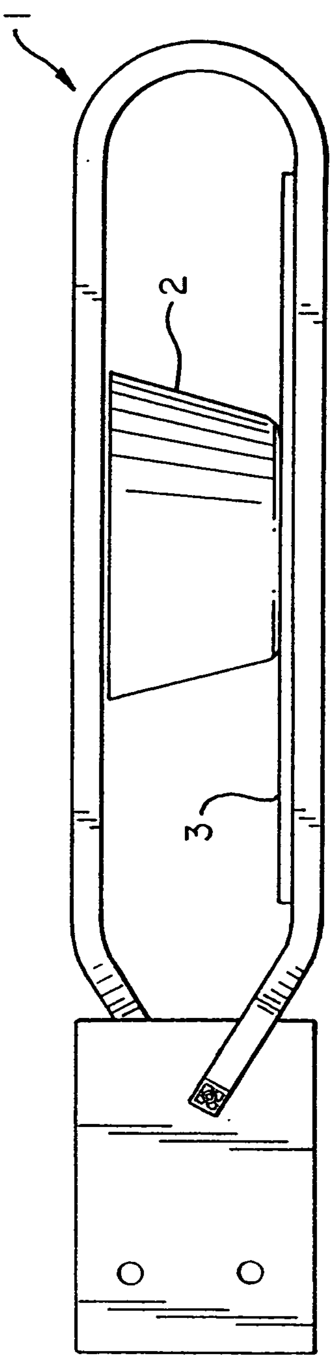


FIG.3

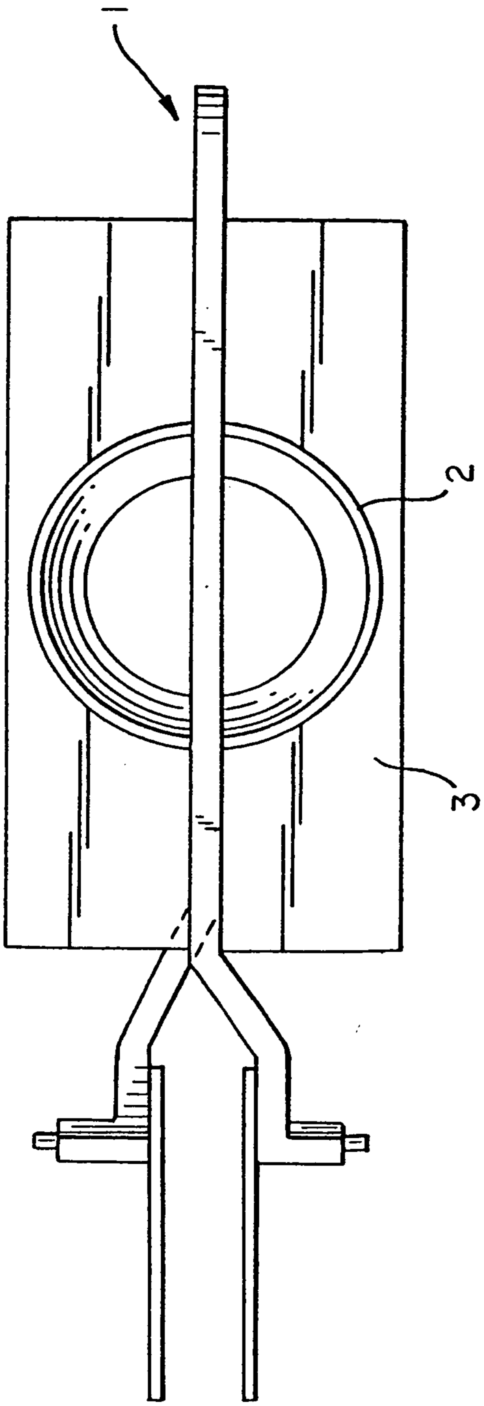


FIG.4

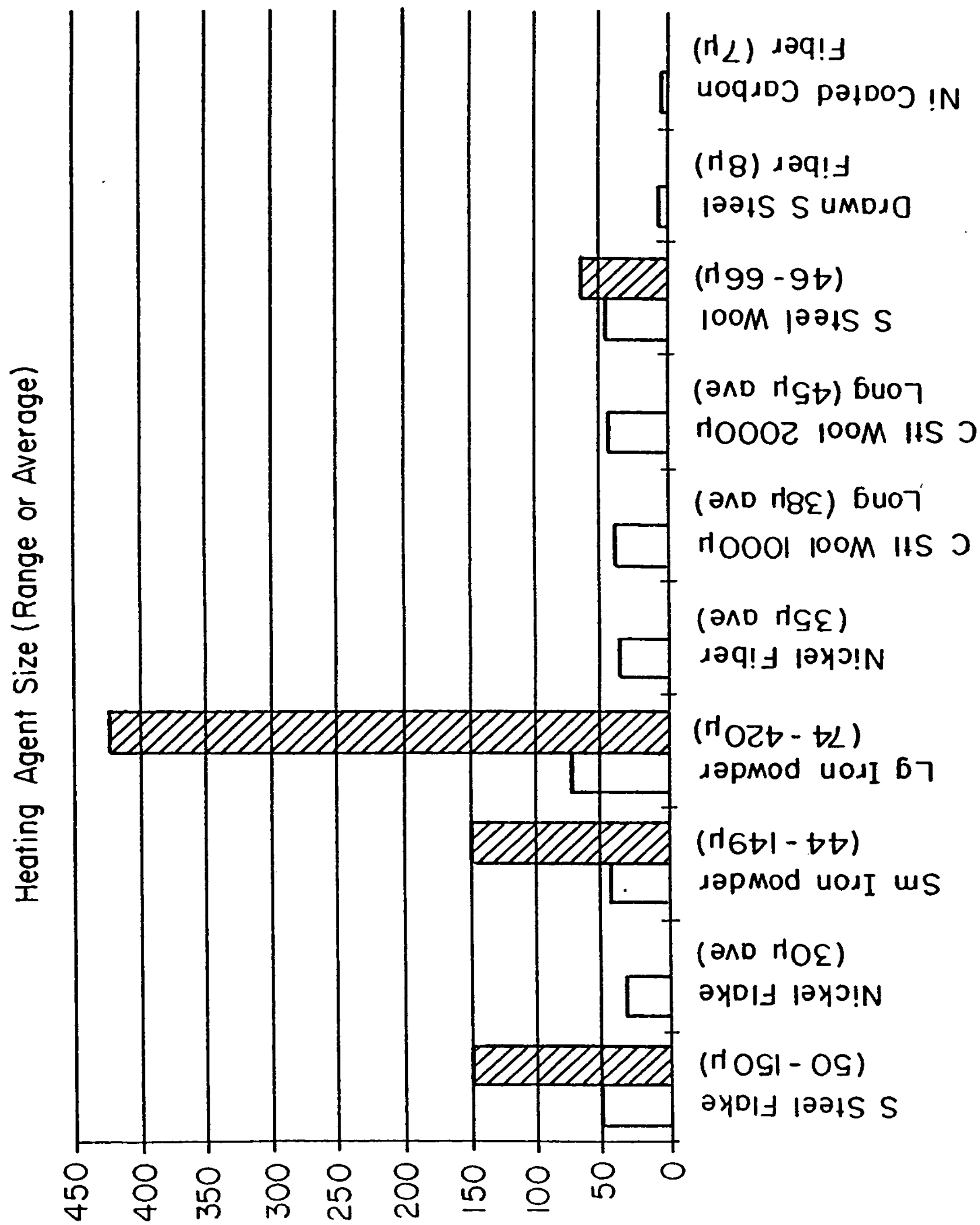

Heating Agent Size (Range or Average)
450
400
350
300
250
200
150
100
50
0
S Steel Flake (50 - 150μ)
Nickel Flake (30μ ave)
Sm Iron powder (44 - 149μ)
Lg Iron powder (74 - 420μ)
Nickel Fiber (35μ ave)
C Stl Wool 1000μ Long (38μ ave)
C Stl Wool 2000μ Long (45μ ave)
S Steel Wool (46 - 66μ)
Drawn S Steel Fiber (8μ)
Ni Coated Carbon Fiber (7μ)

FIG.5

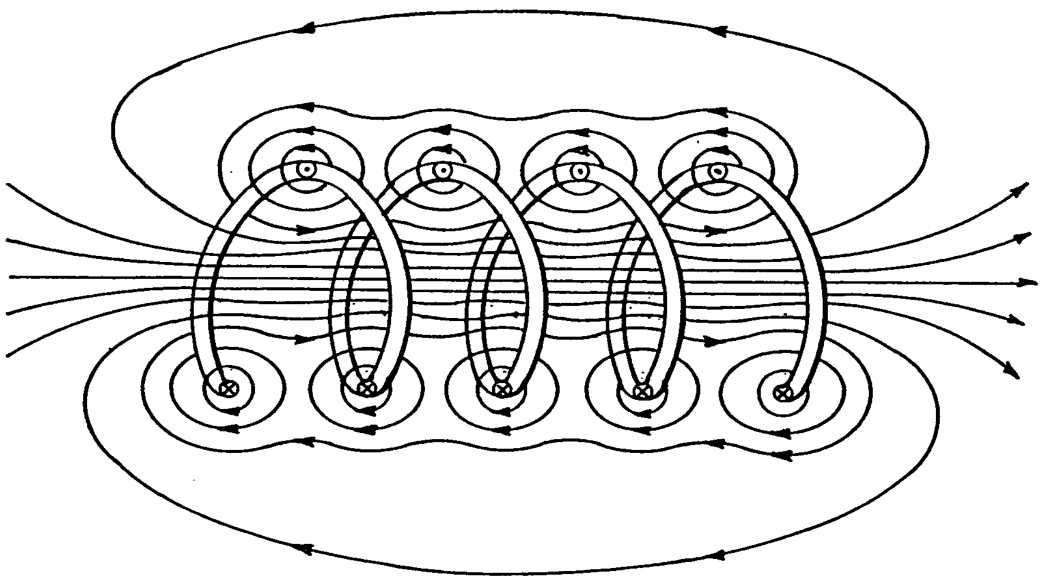


FIG. 6

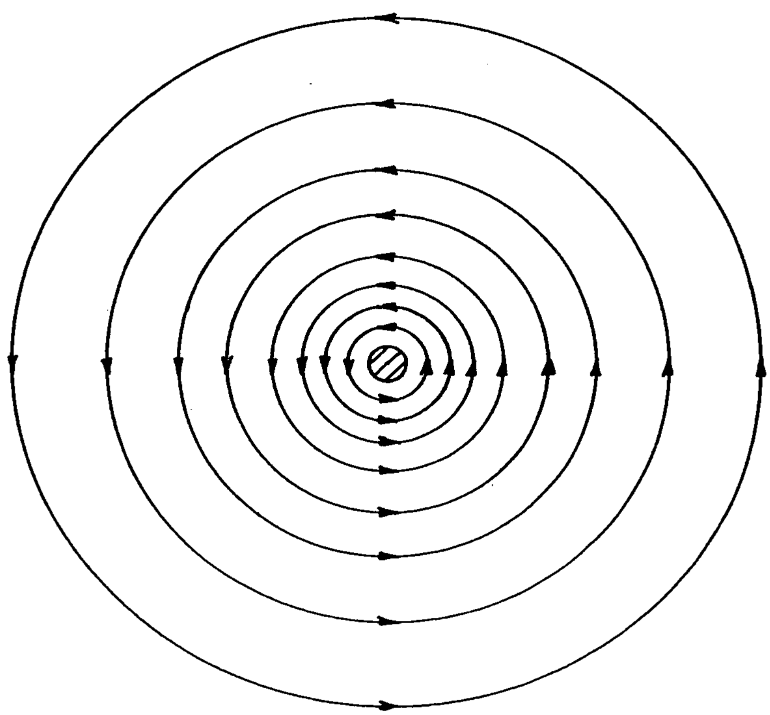


FIG. 7

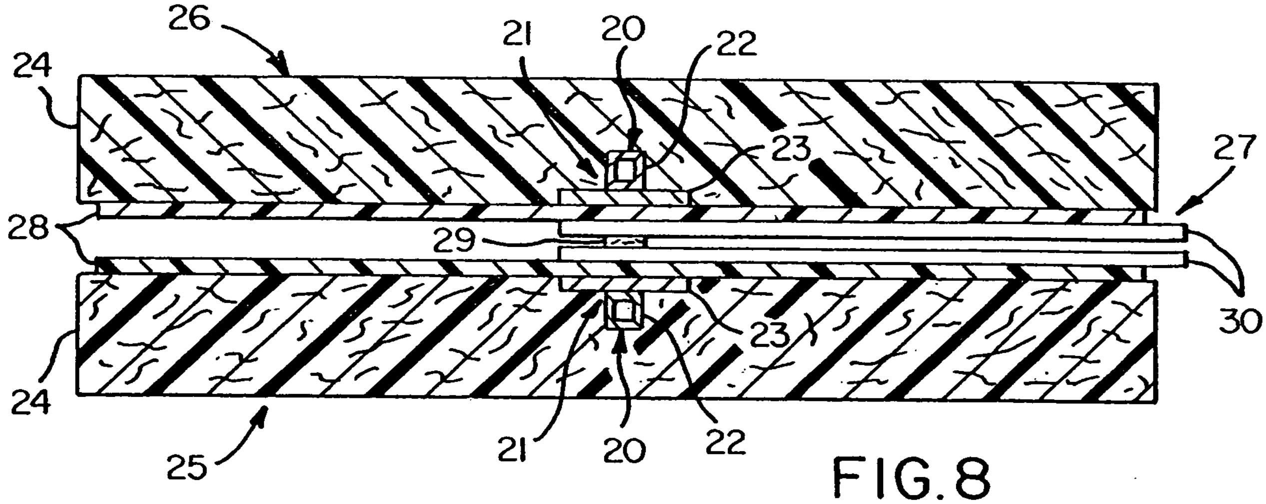


FIG.8

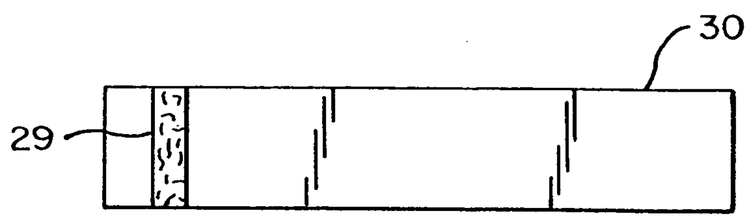


FIG.10

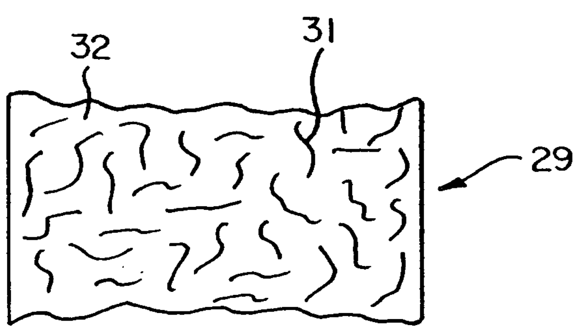


FIG.9

FIG. 11

Table I

The skin depths, based on the values of Monovoukas an Tudbury are as follows:
Skin Depths in microns

	Nickel		Low C Steel/Iron			400S. Steel		300 S. Steel	
Freq.	68°F	600°F	68°F	200°F	1000°F	68°F	1000°F	68°F	600°F
200 KHz	28	61	64	72	138	140	180	968	1120
335 KHz	23	47	49	56	106	108	138	747	866
388 KHz	21	44	46	52	99	101	129	694	805
488 KHz	19	39	41	46	88	90	115	619	718
738 KHz	15	32	33	38	72	73	93	503	583
3.5 MHz	7	15	15	17	33	34	43	231	268
4.0 MHz	7	14	14	16	31	31	40	216	251
5.0 MHz	6	12	13	14	27	28	36	193	224

FIG. 12

Table II

	335	388	488	738	3.5M	4.0M	5.0M	335	388	488	738	3.5M	4.0M	5.0M
Susceptor	ΔOil	ΔOil	ΔOil	ΔOil	ΔOil	ΔOil	ΔOil			Heating rate as %				
Sec	20	20	20	20	20	20	20		of heating rate of iron powder 74 - 420μ					
Ni Flake 15-20μ x 1μ	0	0	0.4	2	0	2	4	0%	0%	14%	29%	0%	8%	14%
Ni Flake 15-40μ x 2μ	0	0.4	0.4	4	0	2	4	0%	25%	14%	57%	0%	8%	14%
Ni Flake 30 x 0.4μ	0	0.4	0.4	5	2	4	4	0%	25%	14%	71%	17%	17%	14%
Ni Fiber 35 x 1000μ	2.4	3.6	5.6	14	38	48	60	200%	225%	200%	200%	317%	200%	214%
Ni Fiber 35 x 260μ	1.2	2	3.2	9	20	30	48	100%	125%	114%	129%	167%	125%	171%
C steel wool 38 x 1000μ	11.2	15.6	28	66	106	152		933%	975%	1000%	943%	883%	633%	
C steel wool 45 x 2000μ	15.6	23.2	38.4	86	108	152		1300%	1450%	1371%	1229%	900%	633%	
Iron powder 74-420μ	1.2	1.6	2.8	7	12	24	28	100%	100%	100%	100%	100%	100%	100%
Iron powder 35-150μ	0.8	0.8	1.2	3	6	16	18	67%	50%	43%	43%	50%	67%	64%
300 SS Flake 50-150μ	0.4	0.4	0.8		2	0	2	33%	25%	29%		17%	0%	7%
300 SS Fiber 8 x 4000μ	2		3.2	16	20	76	112	167%		114%	229%	167%	317%	400%
300 SS RapS Fb 75x3500μ	0.4	0.4	0.4					33%	25%	25%				
Ni Carbon Fiber 7 x 6000μ			1.2	9	120	140	240			43%	129%	1000%	583%	857%
400 SS Dn Fb 22 x 3500μ	9.2	12.8	22.4					767%	800%	800%				
400 SS Wool 45x2000μ	14	20.8	37.6					1167%	1300%	1343%				
400 SS Wool 45x4000μ	13.2	20	33.6					1100%	1250%	1200%				
400 SS RapS Fb 150x4500μ	7.2	9.6	18					600%	600%	643%				

FIG. 13

Table III

Susceptor	388 Khz	488 KHz	388Khz	488 KHz
	ΔOil, F°	ΔOil, F°	Heating rate as % of heating rate of iron powder 74 - 420μ	
	20 sec	20sec		
	6 turn	6 turn		
Ni Flake 15 - 40x2μ	76	116	380%	557%
Ni Flake 30x0.4μ		108		386%
Ni Flake 15 - 20x2μ	36		180%	
300 SS Flake 50-150μ		28		100%
Ni Fiber 35x1000μ	32	44	160%	157%
Ni Fiber 35x260μ	12	12	60%	43%
300 SS fiber 8x4000μ	130	196	650%	700%
Ni Carbon Fiber 7x4000μ	86	116	430%	414%
400 SS Dn Fiber 22x3500μ	88	152	440%	543%
400 SS Wool 45x2000μ	134	188	670%	671%
400 SS Wool 45x4000μ		184		657%
C steel wool 38x1000μ	118	156	590%	557%
C steel wool 45x2000μ	176	284	880%	1014%
Iron powder 74-420μ	20	28	100%	100%
Iron powder 35-150μ	2	8	10%	29%
300SS RapS Fb 75-3500μ		16		57%
400SS RapS Fb150x4500μ		100		357%

FIG. 14

Table IV

Heating Agent	% Loading by weight	Optimum weld time 5.5 MHz	64% iron powder weld time as % of optimum weld time	Optimum weld time 3.6MHz
Iron powder 74 - 420μ	64%	22sec	100 %	No weld
C Steel Wool Fiber 38 x 1000μ	10 %	14sec	157 %	
	15 %	10sec	220%	
	25 %	5sec	440 %	25sec
	35%	3 sec	730 %	15sec
	45%	2 sec	1100 %	12sec
S Steel Wool Fiber 45 x 2000μ	25%	7 sec	310%	40sec
	35⁄	4 sec	550%	25sec